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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|--------------------------------|------------------------|
| 10/797,231 | 03/10/2004 | Richard Hammond | ASC-057C1 | 2980 |
| 51414 7590 01/09/2008 GOODWIN PROCTER LLP PATENT ADMINISTRATOR EXCHANGE PLACE BOSTON, MA 02109-2881 | | | EXAMINER GHYKA, ALEXANDER G | |
| | | | ART UNIT 2812 | PAPER NUMBER |
| | | | MAIL DATE 01/09/2008 | DELIVERY MODE PAPER |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/797,231 | HAMMOND ET AL. | |
| | Examiner | Art Unit | |
| | Alexander G. Ghyka | 2812 | |

**– The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 02 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 28-55 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 28-55 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 10 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Applicants' pre-appeal brief request for review of 8/15/2007 has been considered and entered in the record. The rejection under 35 USC 102 has been withdrawn in view of Applicants' arguments. The following rejections are made. Accordingly, the Final Rejection of the previous Office Action is *withdrawn*. This Office Action is a Non Final Rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 28-55 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ismail (Si/SiGe High Speed Field Effect Transistors, IEEE 1995) "Ismail" in view of Chang et al (Selective Etching of SiGe on SiGe/Si Heterostructures, J. Electrochem, Soc. Vol 138, No. 1, 1991 "Chang et al").

The present Claims generally require providing a strained semiconductor layer; providing a SiGe layer over said strained semiconductor layer; and selectively removing said SiGe layer to expose said strained semiconductor layer.

Ismail et al shows a FET formed providing a strained semiconductor layer; providing a SiGe layer over the strained semiconductor layer. See Figure 7, pg 20.01.03. The strained semiconductor layer comprises Si as required by present Claim 29 and 49. A relaxed semiconductor layer comprising Si and Ge is provided beneath the strained layer as required by present Claims 31-33 and 49-52. See Figure 7, page 20.1.3. With respect to Claims 34-35 and 53-55, Ismail discloses an insulator layer and exemplifies silicon dioxide. See last paragraph of column 1, page 20.1.3. With respect to Claims 40-44, Ismail discloses MOSFETs. See Figure 9, page 20.1.3. With respect to Claims 45 and 46, Ismail et al discloses a buried channel and gate as required by the afore mentioned Claims. See Figures 7 and 9, column 20.1.3. With respect to Claims 47-48, Ismail disclose source and drain regions which are doped as required by the present Claims. See Figures 7 and 9, column 20.1.3.

Ismail is relied upon as discussed above.

However, Ismail does not disclose selectively removing the SiGe layer to expose the strained semiconductor layer

Chang et al disclose a method for selectively removing SiGe disposed over Si by chemically oxidizing the SiGe to form a SiGe oxide in one region but not in another and then removing the oxidized SiGe. See page 202, columns 1 and 2 and page 203, Fig 4.

It would be obvious for one of ordinary skill in the art, at the time of the invention, to use the oxidation and etch method of Chang et al, to form the SiGe/Si structures of Ismail, for their known benefit in the art of selectively removing the SiGe layer as disclosed by the Chang et al reference.

With respect to Claims 36-39, the oxidation and etch technique as required by the afore mentioned Claims, are disclosed by the Chang reference.

With respect to Claim 46 and dependent Claims, Ismail et al disclose the use of insulated gates. It would be obvious for one of ordinary skill in the art for one of ordinary skill in the art to use the insulated gate, for its known benefit in the art as a gate.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Alexander G. Ghyka whose telephone number is (571) 272-1669. The examiner can normally be reached on Monday through Friday during general business hours.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Lebentritt can be reached on (571) 272-1873. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

January 6, 2007
AGG

ALEXANDER CIVITA
PRIMARY EXAMINER

AV 2812
